FRIENDS OF THE RIVER

Sacramento Valley Offstream Storage Projects

A Prescription For Extinction For The Sacramento River's Endangered Salmon

Numerous proposals have been considered since the early 1900's to construct so called "offstream" water storage reservoirs in the western Sacramento Valley. "Offstream" projects divert water from an existing source and then stores the water in another area that is presumably less environmentally sensitive. State and federal dam engineers have resurrected three separate offstream storage project proposals for consideration in the CALFED program.

CALFED is a joint federal/state program to develop a long term comprehensive plan intended to restore the ecological health and improve water management in the San Francisco Bay/Sacramento-San Joaquin Delta. The CALFED program was largely prompted by the decline of fish and wildlife species in the Delta and its tributaries caused by the massive system of state and federal dams that have harnessed the Central Valley's waterways. Ironically, the CALFED program is essentially proposing to solve an ecological problem caused by dams and water diversions by building yet more dams and water diversions.

CALFED has released a joint environmental impact statement and environmental impact report (EIS/EIR) for public review and comment by June 1, 1998. The CALFED EIS/EIR considers 12 alternatives for the improvement of the Bay-Delta system. Eight of the 12 alternatives propose additional surface water storage and conveyance facilities upstream and downstream of the Delta. Three of the 28 surface water storage projects considered in CALFED's technical reports (which are not readily available to the public) are offstream storage projects in the western Sacramento Valley.

The intent of the CALFED EIS/EIR is to compare the Sacramento Valley offstream projects against other projects that might be considered as part of a long term CALFED solution for the Bay-Delta system. Unfortunately, the CALFED program gives short shrift to the more efficient use, conservation, and reclamation of our existing water resources as viable alternatives to expensive and environmentally destructive new or enlarged dams.

The three offstream storage projects in the western Sacramento Valley considered by CALFED include:

Sites/Colusa -- The Sites/Colusa project would be located six miles west of the small town of Maxwell and Interstate 5 in the western Sacramento Valley. The project has three alternative variations: (1) a small Sites project requiring two large dams approximately 250 feet in height and five earthen dikes storing 1.2 million acre feet (maf) of water; (2) a large Sites project requiring two large dams approximately 300 feet in height and 12 saddle dams storing 1.9 maf of water; or (3) a Colusa project requiring 4 large dams up to 300 feet high and nine saddle dams storing 3.3 maf of water. * All three variations would depend on water diverted from the Sacramento River. The diversion options include an enlarged Tehama-Colusa canal with a conveyance capacity of 5,000 cubic feet per second (cfs), and a new diversion and canal from the Sacramento River called the "Chico Landing Intertie." The project could also be supplied by the existing Glenn-Colusa Irrigation District (GCID) diversion and canal.

** In comparison, the existing Shasta dam on the Sacramento River is the eighth highest dam in the world, with a height of 600 feet and a storage capacity of 4.5 maf.*

Thomes/Newville -- The Thomes/Newville project would be located in the western Sacramento Valley approximately 15 miles west of the town of Orland and Interstate 5. The project includes a 300-400 foot high Newville dam storing 1.84 maf to 3.08 maf of water, as well as a 112 foot high Tehenn dam and 32,500 af reservoir just downstream of the Newville dam. The Newville and Tehenn dams would be located on the North Fork Stony Creek upstream from the existing Black Butte reservoir on Stony Creek. Water behind Newville dam would come from the North Fork, from a 90 foot high diversion dam on Thomes Creek via a new 2.5 mile canal, and from the Sacramento River. Storage of Sacramento River water would require two new canals totaling nine miles in length connecting an enlarged Tehama-Colusa canal with the Black Butte reservoir, a new five mile long canal connecting Black Butte with the proposed Tehenn reservoir, and three pumping-generation plants to lift the water from the Tehama-Colusa canal to all three reservoirs. The Thomes Creek diversion would be capable of diverting 10,000 cfs to the Newville reservoir. The Sacramento River diversion via the enlarged Tehama-Colusa canal to the Newville reservoir would be 5,000 cfs.

Enlarged Tehama-Colusa Canal -- The proposed Sites/Colusa and Thomes/Newville offstream storage projects would partially depend on water supplied by an enlarged Tehama-Colusa canal. Water from the 41 mile canal is diverted by the Red Bluff diversion dam (RBDD) from the Sacramento River in the town of Red Bluff. Currently, the canal has a carrying capacity of approximately 2,500 cfs. Both projects would be predicated on enlarging the canal capacity to 5,000 cfs. Currently, the RBDD gates are required to be raised from September 15 to May 15 every year to facilitate migration of endangered salmon. Since the proposed offstream storage projects would require winter and spring diversions into the Tehama-Colusa canal, the RBDD would either have to be lowered during the critical salmon migration period or a 5,000 cfs pumping plant could be constructed just downstream of the RBDD. The first option could be mitigated by constructing a new, larger fish ladder on the RBDD, but the efficacy of this measure is unknown. Increasing the capacity of the Tehama-Colusa canal could be accomplished by enlarging the existing canal or building a new canal parallel the existing canal.

Chico Landing Intertie -- The Sites/Colusa project could also be supplied with Sacramento River water via a new diversion from the river near its confluence with Stony Creek downstream of Chico Landing. The proposed Chico Landing Intertie would consist of 10 miles of concrete canals and three pumping plants capable of diverting and conveying up to 5,000 cfs of water. The intertie would connect to the enlarged Tehama-Colusa Canal and thence to the Sites/Colusa project.

Environmental Impacts Of Sacramento Valley Offstream Storage Projects

Aquatic Habitat & Species: A primary concern with offstream storage projects in the Sacramento Valley is the impact of proposed water diversions from the Sacramento River on the river's endangered salmon and steelhead. Currently, all four runs of the river's chinook salmon, as well as steelhead trout, are listed or proposed for listing as threatened and/or endangered species. Existing diversions at the Red Bluff Diversion Dam and at the GCID pumping plant have played a key role in decimating these populations. New fish screens may not be effective in significantly reducing the number of salmon and steelhead killed by the existing and proposed new diversions. In addition, the RBDD acts as a barrier to salmon migration and encourages predation on young salmon by other species. If the dam gates are in operation during key migration periods, even an enlarged fish ladder may not successfully mitigate these impacts. Construction of new diversion facilities also destroys shaded riverine aquatic habitat, an essential habitat for young migrating salmon, steelhead, and other fish species.

The Thomes/Newville project could impact remnant runs of endangered chinook salmon and steelhead in Thomes Creek and Stony Creek by blocking access to spawning habitat and by modifying or reducing downstream flows. The project could also indirectly impact salmon and steelhead habitat in the Sacramento River by reducing spawning gravel recruitment from Thomes Creek. The project would inundate 35 miles of perennial streams, 36 miles of intermittent streams, 14 miles of streamside wetlands, and 152 acres of other wetlands. The project could adversely impact numerous resident fish species, including rainbow trout, brown trout, Sacramento squawfish, Sacramento sucker, and smallmouth bass, as well as resident sensitive amphibians such as the tailed frog. Diversion canals which supply water to the project could also adversely impact aquatic habitat and species. The Tehama-Colusa canal enlargement crosses 30 intermittent streambeds and 71 wetlands.

The Sites/Colusa project would inundate 25 miles of intermittent stream habitat, 38 miles of streamside wetlands, and 39 acres of other wetlands. The project could potentially impact habitat for sensitive amphibian species such as the northern red-legged frog, yellow-legged frog, western spadefoot, and western pond turtle. Other aquatic species potentially impacted include federally listed fairy and tadpole shrimp. In addition, vernal wetlands providing seasonal habitat for waterfowl would be lost. Diversion canals which supply water to the project could also adversely impact aquatic habitat and species. The Tehama-Colusa canal enlargement crosses 30 intermittent streambeds and 71 wetlands.

Terrestrial Habitat & Species: Depending on its size, the Thomes/Newville project could inundate up to 13,900 acres of terrestrial wildlife habitat, including 2,000 acres of critical winter range for the Thomes Creek deer herd, displacing more than 600 migratory and resident deer and impacting habitat that supports up to 145 species of birds. Protected and sensitive wildlife species that could be impacted include bald eagle, northern spotted owl, bank swallow, willow flycatcher, Swainson's hawk, northern goshawk, prairie falcon,

golden eagle, osprey, Coopers hawk, yellow warbler, and tricolored blackbird. One protected and ten sensitive plant species could also be impacted, as well as two special-status habitats: Great Valley cottonwood riparian forest and northern interior cypress forest.

Depending on its size, the Sites/Colusa project would inundate up to 29,600 acres of terrestrial wildlife habitat, including 600 acres of oak woodland considered critical habitat for many species of mammals, birds, reptiles, and amphibians. Protected or sensitive species which may use the area include bald eagle, Swainson's hawk, golden eagle, burrowing owl, greater sandhill crane, San Joaquin pocket mouse, and the endangered Valley elderberry longhorn beetle. There are at least twelve rare or sensitive plant species in the area.

Human Habitat: The project areas are relatively sparsely populated. Approximately ten miles of public and private roads and an unknown number of residences would have to be relocated for the Thomes/Newville project. A portion of the Maxwell-Stonyford road, the small community of Sites and up to 100 people would be displaced by the Sites/Colusa project. Approximately 223 prehistoric sites, 70 historic sites, and 35 ethnographic sites would be impacted by the Thomes/Newville project. Approximately 18 prehistoric sites, 13 historic sites, and three ethnographic sites would be impacted by the Sites/Colusa project.

National Forest Resources: The Thomes Creek diversion could back water up onto upstream public lands managed by the Forest Service to protect critical habitat for the endangered northern spotted owl and other old growth forest dependent species. The dam could also block migration of chinook salmon and steelhead to and from upstream habitat on National Forest lands. The upstream segment of Thomes Creek has been determined eligible by the Forest Service for possible inclusion in the National Wild & Scenic River System in recognition of its outstanding geologic values.

Seismic Impacts: The Thomes/Newville and Sites/Colusa projects would be located over a "fundamental tectonic boundary" between the Sacramento Valley and the Coast Range that includes "hidden" faults capable of producing moderately powerful earthquakes such as the 1892 Winters quake and the 1983 Coalinga quake (both were 6.7 on the Richter scale). Seismic concerns could significantly effect the design and cost of the projects. In addition, the project reservoirs are of sufficient size to raise concerns about reservoir induced earthquakes such as the one caused by the Oroville reservoir in 1975.

Water Quality: Proposed offstream storage reservoirs in the western Sacramento Valley would be relatively shallow. Water released from the reservoirs would be relatively warm in comparison to the colder water in the Sacramento River and undammed tributaries which support salmon and steelhead. In addition, the soils in the western valley are highly mineralized and erosive. Water stored and released from this area would likely carry a high sediment and mineral load (including selenium). Offstream storage water could exacerbate existing poor water quality conditions in the lower Sacramento River. High water temperatures, heavy sediment loads, and pesticide run-off could impact migrating salmon, as well as drinking water quality for the City of Sacramento and other downstream consumers.

Costs: Depending on its size, the Thomes/Newville project could cost from $1.3 billion to $1.9 billion dollars (not including the cost of new or enlarged diversion canals from the Sacramento River). Depending on its size, the Sites/Colusa project could cost from $451 million to $1.7 billion (not including the cost of new or enlarged diversion canals from the Sacramento River). The proposed enlargement of the Tehama-Colusa canal to supply the offstream reservoir(s) could cost up to $830 million depending on the type of diversion and canal constructed. The proposed Chico Landing Intertie diversion and canal could cost up to $471 million.

For more information about the CALFED program, call (800) 700-5752. To comment on the CALFED EIS/EIR, contact CALFED for a list of scheduled public hearings and/or send your written comments by June 1 to Lester Snow, CALFED Bay-Delta Program, 1416 Ninth Street - Suite 1155, Sacramento, CA 95814. For more information about the environmental impacts of the proposed enlargement of Shasta dam and reservoir, contact Steve Evans at Friends of the River at (916) 442-3155 Ext. 221, email: sevans@friendsoftheriver.org.

Sources: CALFED Storage and Conveyance Components Facility Descriptions and Cost Estimates, October 1997; Sites Offstream Storage Project Reconnaissance Survey, DWR, July 1996; Upper Sacramento River Fisheries and Riparian Habitat Management Plan, Resources Agency, January 1989.

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